

## WHAT IS CLAIMED IS:

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1. A system for controlling in response to an operator a consist of at least first and second locomotives having discrete operating modes, said system comprising:

an operator control for use by the operator to indicate a desired operating mode;

a first controller responsive to the desired operating mode as indicated by the operator control for controlling a power operating mode of the first locomotive;

a second controller responsive to the desired operating mode as indicated by the operator control for controlling a power operating mode of the second locomotive wherein, in at least one mode of operation of the system, the power operating mode of the second locomotive is different as compared to the power operating mode of the first locomotive; and

a communication link interconnecting the first and second controller and providing information corresponding to the desired operating mode to the first and second controller; and

wherein the power operating mode of the first and second locomotives is selected to optimize braking capacity of the first and second locomotives.

2. The system of claim 1 further comprising a link to a GPS indicating a position of the consist and wherein the power operating mode is optimized as a function of the position of the consist as indicated by the GPS.

3. The system of claim 1 wherein the power operating mode of the first and second locomotives is a performance parameter, wherein a performance profile of the first and

second locomotives is known and wherein the first and second operating modes are selected to optimize the performance parameter as a function of the performance profile.

4. The system of claim 1 wherein an operating parameter of a locomotive in which a crew member is riding is reduced as compared to an operating parameter of a locomotive in which a crew member is not riding.

5. The system of claim 1 wherein the communication link interconnecting the first and second controller is comprised of a wired communication facility.

6. The system of claim 1 wherein the communication link interconnecting the first and second controller is comprised of a wireless communication facility.

7. A system for controlling in response to an operator a consist of at least first and second locomotives having discrete operating modes, said system comprising:

an operator control for use by the operator to indicate a desired operating mode;

a first controller responsive to the desired operating mode as indicated by the operator control for controlling a power operating mode of the first locomotive;

a second controller responsive to the desired operating mode as indicated by the operator control for controlling a power operating mode of the second locomotive wherein, in at least one mode of operation of the system, the power operating mode of the second locomotive is different as compared to the power operating mode of the first locomotive; and

a communication link interconnecting the first and second controller and providing information corresponding to the

desired operating mode to the first and second controller; and  
a link to a GPS indicating a position of the consist and  
wherein the power operating mode is optimized as a function of  
the position of the consist as indicated by the GPS.

8. The system of claim 7 wherein the power operating  
mode of the first and second locomotives is selected to  
optimize braking capacity of the first and second locomotives.

9. The system of claim 7 wherein the power operating  
mode of the first and second locomotives is a performance  
parameter, wherein a performance profile of the first and  
second locomotives is known and wherein the first and second  
operating modes are selected to optimize the performance  
parameter as a function of the performance profile.

10. The system of claim 7 wherein an operating parameter  
of a locomotive in which a crew member is riding is reduced as  
compared to an operating parameter of a locomotive in which a  
crew member is not riding.

11. The system of claim 7 wherein the communication link  
interconnecting the first and second controller is comprised  
of a wired communication facility.

12. The system of claim 7 wherein the communication link  
interconnecting the first and second controller is comprised  
of a wireless communication facility.

13. A system for controlling in response to an operator  
a consist of at least first and second locomotives having  
discrete operating modes, said system comprising:

an operator control for use by the operator to indicate a

desired operating mode;

a first controller responsive to the desired operating mode as indicated by the operator control for controlling a power operating mode of the first locomotive;

a second controller responsive to the desired operating mode as indicated by the operator control for controlling a power operating mode of the second locomotive wherein, in at least one mode of operation of the system, the power operating mode of the second locomotive is different as compared to the power operating mode of the first locomotive; and

a communication link interconnecting the first and second controller and providing information corresponding to the desired operating mode to the first and second controller; and

wherein the power operating mode of the first and second locomotives is a performance parameter, wherein a performance profile of the first and second locomotives is known and wherein the first and second operating modes are selected to optimize the performance parameter as a function of the performance profile.

14. The system of claim 13 wherein the power operating mode of the first and second locomotives is selected to optimize braking capacity of the first and second locomotives.

15. The system of claim 13 further comprising a link to a GPS indicating a position of the consist and wherein the power operating mode is optimized as a function of the position of the consist as indicated by the GPS.

16. The system of claim 13 wherein an operating parameter of a locomotive in which a crew member is riding is reduced as compared to an operating parameter of a locomotive in which a crew member is not riding.

17. The system of claim 13 wherein the communication link interconnecting the first and second controller is comprised of a wired communication facility.

18. The system of claim 14 wherein the communication link interconnecting the first and second controller is comprised of a wireless communication facility.

19. A system for controlling in response to an operator a consist of at least first and second locomotives having discrete operating modes, said system comprising:

- an operator control for use by the operator to indicate a desired operating mode;

- a first controller responsive to the desired operating mode as indicated by the operator control for controlling a power operating mode of the first locomotive;

- a second controller responsive to the desired operating mode as indicated by the operator control for controlling a power operating mode of the second locomotive wherein, in at least one mode of operation of the system, the power operating mode of the second locomotive is different as compared to the power operating mode of the first locomotive; and

- a communication link interconnecting the first and second controller and providing information corresponding to the desired operating mode to the first and second controller; and

- wherein an operating parameter of a locomotive in which a crew member is riding is reduced as compared to an operating parameter of a locomotive in which a crew member is not riding.

20. The system of claim 19 wherein the power operating mode of the first and second locomotives is selected to

optimize braking capacity of the first and second locomotives.

21. The system of claim 19 further comprising a link to a GPS indicating a position of the consist and wherein the power operating mode is optimized as a function of the position of the consist as indicated by the GPS.

22. The system of claim 19 wherein the power operating mode of the first and second locomotives is a performance parameter, wherein a performance profile of the first and second locomotives is known and wherein the first and second operating modes are selected to optimize the performance parameter as a function of the performance profile.

23. The system of claim 19 wherein the communication link interconnecting the first and second controller is comprised of a wired communication facility.

24. The system of claim 19 wherein the communication link interconnecting the first and second controller is comprised of a wireless communication facility.

25. A system for controlling a consist of at least a first locomotive having a first locomotive control and a second locomotive having a second locomotive control in response to operator input provided to a master control for the consist, said system comprising:

- a communication link providing command information from the master control;

- a first processing module for receiving the command information from the communication link and providing control information to the first locomotive control for controlling a power operating mode of the first locomotive;

a second processing module for receiving the command information from the communication link and providing control information to the second locomotive control for controlling a power operating mode of the second locomotive wherein, in at least one mode of operation, the power operating mode of the second locomotive is different as compared to the power operating mode of the first locomotive; and

wherein the power operating mode of the first and second locomotives is selected to optimize, braking of the first and second locomotives.

26. The system of claim 25 further comprising a link to a GPS indicating a position of the consist and wherein the power operating mode is optimized as a function of the position of the consist as indicated by the GPS.

27. The system of claim 25 wherein the power operating mode of the first and second locomotives is a performance parameter, wherein a performance profile of the first and second locomotives is known and wherein the first and second operating modes are selected to optimize the performance parameter as a function of the performance profile.

28. The system of claim 25 wherein an operating parameter of a locomotive in which a crew member is riding is reduced as compared to an operating parameter of a locomotive in which a crew member is not riding.

29. The system of claim 25 wherein the communication link providing command information from the master control is comprised of a wired communication facility.

30. The system of claim 25 wherein the communication link providing command information from the master control is comprised of a wireless communication facility.

31. A system for controlling a consist of at least a first locomotive having a first locomotive control and a second locomotive having a second locomotive control in response to operator input provided to a master control for the consist, said system comprising:

- a communication link providing command information from the master control;

- a first processing module for receiving the command information from the communication link and providing control information to the first locomotive control for controlling a power operating mode of the first locomotive;

- a second processing module for receiving the command information from the communication link and providing control information to the second locomotive control for controlling a power operating mode of the second locomotive wherein, in at least one mode of operation, the power operating mode of the second locomotive is different as compared to the power operating mode of the first locomotive; and

- a link to a GPS indicating a position of the consist and wherein the power operating mode is optimized as a function of the position of the consist as indicated by the GPS.

32. The system of claim 31 wherein the power operating mode of the first and second locomotives is selected to optimize braking capacity of the first and second locomotives.

33. The system of claim 31 wherein the power operating mode of the first and second locomotives is a performance parameter, wherein a performance profile of the first and



second locomotives is known and wherein the first and second operating modes are selected to optimize the performance parameter as a function of the performance profile.

34. The system of claim 31 wherein an operating parameter of a locomotive in which a crew member is riding is reduced as compared to an operating parameter of a locomotive in which a crew member is not riding.

35. The system of claim 31 wherein the communication link providing command information from the master control is comprised of a wired communication facility.

36. The system of claim 31 wherein the communication link providing command information from the master control is comprised of a wireless communication facility.

37. A system for controlling a consist of at least a first locomotive having a first locomotive control and a second locomotive having a second locomotive control in response to operator input provided to a master control for the consist, said system comprising:

- a communication link providing command information from the master control;

- a first processing module for receiving the command information from the communication link and providing control information to the first locomotive control for controlling a power operating mode of the first locomotive;

- a second processing module for receiving the command information from the communication link and providing control information to the second locomotive control for controlling a power operating mode of the second locomotive wherein, in at least one mode of operation, the power operating mode of the

second locomotive is different as compared to the power operating mode of the first locomotive; and

wherein the power operating mode of the first and second locomotives is a performance parameter, wherein a performance profile of the first and second locomotives is known and wherein the first and second operating modes are selected to optimize the performance parameter as a function of the performance profile.

38. The system of claim 37 wherein the power operating mode of the first and second locomotives is selected to optimize braking capacity of the first and second locomotives.

39. The system of claim 37 further comprising a link to a GPS indicating a position of the consist and wherein the power operating mode is optimized as a function of the position of the consist as indicated by the GPS.

40. The system of claim 37 wherein an operating parameter of a locomotive in which a crew member is riding is reduced as compared to an operating parameter of a locomotive in which a crew member is not riding.

41. The system of claim 37 wherein the communication link providing command information from the master control is comprised of a wired communication facility.

42. The system of claim 37 wherein the communication link providing command information from the master control is comprised of a wireless communication facility.

43. A system for controlling a consist of at least a first locomotive having a first locomotive control and a

second locomotive having a second locomotive control in response to operator input provided to a master control for the consist, said system comprising:

- a communication link providing command information from the master control;

- a first processing module for receiving the command information from the communication link and providing control information to the first locomotive control for controlling a power operating mode of the first locomotive;

- a second processing module for receiving the command information from the communication link and providing control information to the second locomotive control for controlling a power operating mode of the second locomotive wherein, in at least one mode of operation, the power operating mode of the second locomotive is different as compared to the power operating mode of the first locomotive; and

wherein an operating parameter of a locomotive in which a crew member is riding is reduced as compared to an operating parameter of a locomotive in which a crew member is not riding.

44. The system of claim 43 wherein the power operating mode of the first and second locomotives is selected to optimize braking capacity of the first and second locomotives.

45. The system of claim 43 further comprising a link to a GPS indicating a position of the consist and wherein the power operating mode is optimized as a function of the position of the consist as indicated by the GPS.

46. The system of claim 43 wherein the power operating mode of the first and second locomotives is a performance parameter, wherein a performance profile of the first and

second locomotives is known and wherein the first and second operating modes are selected to optimize the performance parameter as a function of the performance profile.

47. The system of claim 43 wherein the communication link providing command information from the master control is comprised of a wired communication facility.

48. The system of claim 43 wherein the communication link providing command information from the master control is comprised of a wireless communication facility.

49. In a system for controlling in response to an operator a consist of at least first and second locomotives, wherein the system includes:

- an operator control for use by the operator to indicate a desired operating mode of the consist;

- a first controller for controlling a discrete power operating mode of the first locomotive;

- a second controller for controlling a discrete power operating mode of the second locomotive;

- a communication link for communicating the desired operating mode of the consist to the first and second controllers; further comprising:

- a first module between the operator control and the first control, the first module receiving the desired operating mode via the communication link and selectively providing a first modified operating mode to the first controller;

- a second module between the operator control and the second control, the second module receiving the desired operating mode via the communication link and selectively providing a second modified operating mode to the second controller;

wherein, in at least one mode of operation of the consist, the power operating mode of the first and second locomotives is different as compared to the desired operating mode of the consist; and

wherein the power operating mode of the first and second locomotives is selected to optimize braking capacity of the first and second locomotives.

50. The system of claim 49 further comprising a link to a GPS indicating a position of the consist and wherein the power operating mode is optimized as a function of the position of the consist as indicated by the GPS.

51. The system of claim 49 wherein the power operating mode of the first and second locomotives is a performance parameter, wherein a performance profile of the first and second locomotives is known and wherein the first and second operating modes are selected to optimize the performance parameter as a function of the performance profile.

52. The system of claim 49 wherein an operating parameter of a locomotive in which a crew member is riding is reduced as compared to an operating parameter of a locomotive in which a crew member is not riding.

53. The system of claim 49 wherein the communication link for communicating the desired operating mode of the consist to the first and second controllers is comprised of a wired communication facility.

54. The system of claim 49 wherein the communication link for communicating the desired operating mode of the

consist to the first and second controllers is comprised of a wireless communication facility.

55. In a system for controlling in response to an operator a consist of at least first and second locomotives, wherein the system includes:

- an operator control for use by the operator to indicate a desired operating mode of the consist;

- a first controller for controlling a discrete power operating mode of the first locomotive;

- a second controller for controlling a discrete power operating mode of the second locomotive;

- a communication link for communicating the desired operating mode of the consist to the first and second controllers; further comprising:

- a first module between the operator control and the first control, the first module receiving the desired operating mode via the communication link and selectively providing a first modified operating mode to the first controller;

- a second module between the operator control and the second control, the second module receiving the desired operating mode via the communication link and selectively providing a second modified operating mode to the second controller;

- a link to a GPS indicating a position of the consist and wherein the power operating mode is optimized as a function of the position of the consist as indicated by the GPS; and

- wherein, in at least one mode of operation of the consist, the power operating mode of the first and second locomotives is different as compared to the desired operating mode of the consist.

56. The system of claim 55 wherein the power operating mode of the first and second locomotives is selected to optimize braking capacity of the first and second locomotives.

57. The system of claim 55 wherein the power operating mode of the first and second locomotives is a performance parameter, wherein a performance profile of the first and second locomotives is known and wherein the first and second operating modes are selected to optimize the performance parameter as a function of the performance profile.

58. The system of claim 55 wherein an operating parameter of a locomotive in which a crew member is riding is reduced as compared to an operating parameter of a locomotive in which a crew member is not riding.

59. The system of claim 55 wherein the communication link for communicating the desired operating mode of the consist to the first and second controllers is comprised of a wired communication facility.

60. The system of claim 55 wherein the communication link for communicating the desired operating mode of the consist to the first and second controllers is comprised of a wireless communication facility.

61. In a system for controlling in response to an operator a consist of at least first and second locomotives, wherein the system includes:

an operator control for use by the operator to indicate a desired operating mode of the consist;

a first controller for controlling a discrete power operating mode of the first locomotive;

a second controller for controlling a discrete power operating mode of the second locomotive;

a communication link for communicating the desired operating mode of the consist to the first and second controllers; further comprising:

a first module between the operator control and the first control, the first module receiving the desired operating mode via the communication link and selectively providing a first modified operating mode to the first controller;

a second module between the operator control and the second control, the second module receiving the desired operating mode via the communication link and selectively providing a second modified operating mode to the second controller;

wherein, in at least one mode of operation of the consist, the power operating mode of the first and second locomotives is different as compared to the desired operating mode of the consist; and

wherein the power operating mode of the first and second locomotives is a performance parameter, wherein a performance profile of the first and second locomotives is known and wherein the first and second operating modes are selected to optimize the performance parameter as a function of the performance profile.

62. The system of claim 61 wherein the power operating mode of the first and second locomotives is selected to optimize braking capacity of the first and second locomotives.

63. The system of claim 61 further comprising a link to a GPS indicating a position of the consist and wherein the



power operating mode is optimized as a function of the position of the consist as indicated by the GPS.

64. The system of claim 61 wherein an operating parameter of a locomotive in which a crew member is riding is reduced as compared to an operating parameter of a locomotive in which a crew member is not riding.

65. The system of claim 61 wherein the communication link for communicating the desired operating mode of the consist to the first and second controllers is comprised of a wired communication facility.

66. The system of claim 61 wherein the communication link for communicating the desired operating mode of the consist to the first and second controllers is comprised of a wireless communication facility.